(6 pages) **Reg. No. :** .....

Code No. :7186 **Sub. Code :PZOM 21**

M.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2019.

Second Semester

Zoology— Core

MICROBIOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The first person who extensively described microorganism
   (a) Antony Van Leeuwenhock
   (b) Steven Jay Gould
   (c) Alexander Fleming
   (d) Edward Jenner

2. Lipopolysaccharide is a major component of cell wall in
   (a) Gram positive bacteria
   (b) Fungi
   (c) Gram negative bacteria
   (d) Parasites

3. The process by which a medium is made free of all organisms either in Vegetative or spore form is known as
   (a) Sterilization (b) Asepsis
   (c) Disinfection (d) None of the above

4. Low temperature and time period used in holder method of pasteurization
   (a) 63°C for 30 minutes
   (b) 63°C for 50 minutes
   (c) 72°C for 20 seconds
   (d) 72°C for 40 seconds

5. Fungus which produced aftatoxins
   (a) Fusarium monilifoforme
   (b) Aspergillus flavus
   (c) Aspergillus conicus
   (d) Aspergillus echinulatus

6. Acute bacterial gastroenteritis in human is caused by

(a) Listeria monocystogenes

(b) Arcobacter butzleri

(c) Escherichia coil

(d) Campylobacter jejuni

7. whooping cough is caused by the gram negative bacterium

(a) Mycobacterium bovis

(b) Mycobacterium africanum

(c) Bordetella pertussis

(d) Mycoplasma pneumoniae

8. Treponema pallidum which causes a contagious sexually transmitted disease known as

(a) Gonorrhea (b) Syphilis

(c) Anthrax (d) Leprosy

9. The aminoacid glutamic acid is produced by the microorganism

(a) Corynebacterium glutamicum

(b) Microbacterium salicinovorum

(c) Brevibactetium amino genes

(d) All the above

10. The small scale sewage treatment is

(a) Oxidation pond

(b) Cesspools

(c) The trickling filter

(d) Anaerobic digester

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

(Draw diagram wherever necessary)

11. (a) Enumerate the classification of fungi.

Or

(b) Differentiate between gram negative and gram positive bacteria

12. (a) Write short notes on enriched media and enrichment media.

Or

(b) Explain briefly on growth curve.

13. (a) Give briefly the fermentation of milk.

Or

(b) Explain the industrial production of penicillin

14. (a) What is diphtheria? Explain its causative organism and control measures.

Or

(b) Explain the causative agent and control measures of dengue fever

15. (a) Discuss briefly biodegradation of xenobiotics

Or

(b) Discuss the biology and economic importance of cauliflower mosaic virus.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

(Draw diagram wherever necessary)

16. (a) Discuss in detail the major characteristics used in classification.

Or

(b) Classify microorganism Write in detail about the three kingdom classification.

17. (a) Explain in detail the pure culture techniques.

Or

(b) Enumerate the methods of preservation and maintenance of culture.

18. (a) Describe the intrinsic factor involved in food spoilage.

Or

(b) Discuss in detail the preservation of food.

19. (a) Discuss briefly on air borne bacterial diseases.

Or

(b) Discuss briefly the sexually transmitted diseases.

20. (a) What is biogeochemical cycle? Discuss phosphorus cycle.

Or

(b) Describe in detail the secondary treatment of sewage.

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(6 pages) **Reg. No. :** .....

Code No. : 6887 **Sub. Code : KZOM 31/ PZOM 31**

M.Sc(CBCS) DEGREE EXAMINATION, APRIL 2019.

Third Semester

Zoology

ANIMAL PHYSIOLOGY

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. An alpha – amylase reacts with starch to form
   (a) Glucose (b) Sucrose
   (c) Maltose (d) Fructose

2. Digested food materials are absorbed by
   (a) Blood vessels (b) Rectum
   (c) Stomach (d) Intestinal villi

3. The blood vessel which transports deoxygenated blood from the heart to the lungs is
   (a) Pulmonary artery
   (b) Pulmonary vein
   (c) Coronary vein
   (d) NOTA

4. Vitamin K is neccessary for the biosynthesis of —————— in the liver.
   (a) Proteins (b) Amino acids
   (c) Lipases (d) Prothrombin

5. Which of the following is a non-nucleated cell 2
   (a) WBC (b) RBC
   (c) Lymphocyte (d) Neuron

6. Enhanced levels of urea and creatinine in humam blood serum indicate
   (a) Brain disorder
   (b) Renal disorder
   (c) Cardiovascular disorder
   (d) Chromosomal anomaly

7. Synapse is a functional contact between two
   (a) Neurons (b) Nephrons
   (c) Veins (d) Arteries

8. Myoglobin is abundant in

(a) Nerve Cells (b) Bone Cells

(c) Epithelial Cells (d) Muscle Cells

9. Testosterone is secreted only in

(a) Females (b) Male babies

(c) Adult males (d) Children

10. Antidiuretic hormone is

(a) LH (b) TSH

(c) Vasopressin (d) FSH

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words

11. (a) Write an essay on various enzymes involved in protein digestion.

Or

(b) "Vitamins and minerals are essential for growth and sustainable health"- Substantiate.

12. (a) Bring out characteristics of human heart.

Or

(b) What are the differences between an artery and a vein?

13. (a) Explain about respiration in water with an example

Or

(b) Write a brief account about regulation of water and electrolyte during urine format ion

14. (a) Define action potential. Explain how is it generated during nerve impulse transmission.

Or

(b) Write an essay on the detailed structure of human ear

15. (a) Explain the histology human ovary

Or

(b) What is menstruation? Explain the role of hormones in it?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Elucidate the role of gastrointestinal hormones in the digestion and absorption of organic nutrients

Or

(b) Write an essay on fat soluble vitamins and their importance in human physiology

17. (a) Describe with experiments about the neural and chemical regulation of human heart.

Or

(b) Elucidate the biochemical factors that determine blood groups in man

18. (a) Bring out various biochemical aspects involved in the neuro —chemical regulation of respiration

Or

(b) Write an essay about the hormonal control of osmo—iono regulation

19. (a) Explain the ultra structure of synapse. Explain the biochemistry about the conduction of nerve impulse through the synapse

Or

(b) Describe in detail about the neural control of muscle tone and its function

20. (a) Explain the morphology and histology of human testis and ovary and mention the hormones secreted by them.

Or

(b) Write an essay on the structure and functions of the master endocrine gland.

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(6 pages) **Reg. No. :** .....

Code No. : 7189 **Sub. Code : PZOM 32**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Third Semester

Zoology – Core

BIOTECHNOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Western blotting is devised by

(a) Southern (b) Towbin

(c) Alwine (d) Alec Jeffrey

2. The enzyme used to join the nucleotides is

(a) Endonucleases (b) Exonucleases

(c) DNA ligases (d) DNA gyrase

3. The cloning vectors developed from virus are

(a) SV 40

(b) Ca MV virus

(c) BPV vector

(d) All the above

4. Introduction of rDNA into cells by electric treatment is

(a) Liposome fusion

(b) Microinjection

(c) Electroporation

(d) Transformation

5. Antibiotics are

(a) Primary metabolites

(b) Secondary metabolites

(c) Tertiary metabolites

(d) RELP

6. Dolly is a first cloned

(a) Mule (b) Sheep

(c) Cat (d) Dog

7. An apparatus in which a biological process is carried out is

(a) fermenter (b) bioreactor

(c) turbidostat (d) chemostat

8. Which microorganisms are utilized as biofertilizers

(a) Rhizobium

(b) Azospirillium

(c) Azotobacter

(d) All the above

9. Nanoparticles use din drug delivery are

(a) Nanodots

(b) Nanotubes

(c) Nanodusts

(d) Both (a) and (b)

10. Which is the antiviral protein?

(a) Interleukin

(b) Interferon

(c) Virulin

(d) Linker

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What is cDNA Bank. How it is constructed?

Or

(b) What are the different types of restriction enzymes?

12. (a) Write briefly on cloning vector for Agrobacterium tumifaciens.

Or

(b) Write short notes on simian virus 40.

13. (a) What are the requirements for animal cell and tissue culture?

Or

(b) Write briefly on whole embryo culture.

14. (a) Mention the useful and undesirable feature of biofuels.

Or

(b) Briefly explain the various steps involved in down stream processing.

15. (a) Brief on diagnostic kit development for microbial analysis.

Or

(b) Write short note on genetically Engineered microorganisms.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give an illustrated account on gene cloning.

Or

(b) Write an account on Maxam Gilbert method of gene sequencing.

17. (a) Write in detail on methods of gene transfer in cloning.

Or

(b) Discuss in detail about the cloning vectors.

18. (a) Write in detail about invitro fertilization and embryo transfer in human.

Or

(b) Describe the methods of organ culture.

19. (a) What is bioremediation? Explain the bioremediation of industrial waste.

Or

(b) What is fermentor. Explain the production of a secondary metabolite with example.

20. (a) Describe drug design, delivery and targetting.

Or

(b) Write in detail the applications of Nanobiotechnology.

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(6 pages) Reg. No. : .....

Code No. : 7603 **Sub. Code : KZOM 23/ PZOM 23**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Second Semester

Zoology

EVOLUTION

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Living things originated spontaneously from in animate objects called

   (a) abiogenesis

   (b) biopoesis

   (c) both (a) and (b)

   (d) biogenesis

2. The modern hypothesis of origin of life was formulated by

(a) Haeckel (b) Oparin

(c) Both (a) and (b) (d) Gamow

3. Study of fossils is

(a) Palaeontology

(b) Herpetology

(c) Saurology

(d) Organic evolution

4. Which evidence of evolution is related to Darwin's finches?

(a) evidences from biogeographical distribution

(b) evidences from embryology

(c) evidences from comparative anatomy

(d) evidences from paleontology.

5. A rapid and abrupt mode of species formation is known as

(a) phyletic speciation

(b) true speciation

(b) sympatric speciation

(d) quantum speciation

6. Which type of selection can lead to variation?

(a) Directional

(b) Disruptive

(c) Both (a) and (b)

(d) Normal

7. When lineages split and evolve along separate adaptive pathways showing increased morphological differences in a given biospace is called

(a) adaptive divergence

(b) Divergent evolution

(c) Both (a) and (b)

(d) Radiation

8. Which is not a micro evolutionary force?

(a) Gene flow (b) Genetic drift

(c) Mutation (d) Variation

9. Alarm calls are another popular example for _____ motivated by kin selection.

(a) altruistic behaviour

(b) kith selection

(c) both (a) and (b)

(d) natural selection

10. How were the first modern humans (*Homo sapiens*) different from any other hominid species?

(a) They lived outside of Africa

(b) They had large brain

(c) They used and controlled fire

(d) They used symbotic thought

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write a note on biogeny of protein?

Or

(b) Comment on the concept of Oparin and Haldane.

12. (a) List out the types of fossils.

Or

(b) Describe the mutation theory.

13. (a) What is gene frequency? Explain.

Or

(b) Describe various kinds of variation and write their importance.

14. (a) Differentiate between pre adaptations and post adaptation.

Or

(b) Give an account on rates of evolution.

15. (a) What is altruism? Explain.

Or

(b) What is allometry? Explain.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write an essay on biochemical origin of life.

Or

(b) Explain the biological evolution.

17. (a) Write an essay on morphological and paleontological evidences in support of organic evolution.

Or

(b) Describe the theory of inheritance of acquired characters.

18. (a) State Hardy Weinberg's law of equilibrium.

Or

(b) What is the genetic drift? Discuss genetic basis of random genetic drift.

19. (a) Write an essay on extinction and its causes.

Or

(b) What is microevolution? Explain different types of microevolution.

20. (a) Describe the cultural evolution of men.

Or

(b) Explain the stages of primate evolution including *Homo sapiens*.

(6 pages) Reg. No. : .....

Code No. : 7606 **Sub. Code : KZOM 31/ PZOM 31**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Third Semester

Zoology

ANIMAL PHYSIOLOGY

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. The key enzyme in the regulation of fatty acid synthesis is

   (a) Acetyl coA carboxylase

   (b) AMP activated proteinkinase

   (c) Protein phosphatase

   (d) None of the above

2. The major protein constituent of high density lipoprotein (HDL)

   (a) Apolipoprotein A-1

   (b) Apolipoprotein C-1

   (c) Apolipoprotein E

   (d) None of the above

3. In left side of the heart which one is responsible for pumping

   (a) Oxygenated blood to the lungs

   (b) Oxygenated blood to the body

   (c) Deoxygenated blood to the body

   (d) Deoxygenated blood to the lungs

4. The main structure of the integumentary system is

   (a) Brain (b) Lungs

   (c) Heart (d) Skin

5. The system that enables support the body and protect internal organ is

   (a) Reproductive system

   (b) Skeletal system

   (c) Respiratory system

   (d) Circulatory system

6. The main passageway that Leads to the lungs from the throat is

(a) Pharynx (b) Epiglottis

(c) Esophagus (d) Trachea

7. The neuron cell made up of the following parts

(a) Dendrite (b) Axon

(c) Nucleus (d) All of the above

8. The common neurotransmitters include

(a) Acetylcholine (b) GABA

(c) Serotonin (d) All of the above

9. Insulin is represented as a

(a) Vitamin (b) Lipid

(c) Enzyme (d) Hormone

10. Leydig's cells present in

(a) Ovary and estrogen

(b) Liver and cholestrol

(c) Pancreas and glycogen

(d) Testis

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 250 words

11. (a) Explain the importance of carbohydrates.

Or

(b) Explain the process of digestion in human beings.

12. (a) Explain the general circulation system of fish.

Or

(b) Give a brief note on the structure of arteries and veins.

13. (a) Explain the process of gas movement through respiration membrane surface.

Or

(b) Give an account on the hormonal control of Osmoregulation.

14. (a) Neurotransmitters- Discuss.

Or

(b) Give an account on the structure and function of sensory organs.

15. (a) Comment on excretory organs and their functions.

Or

(b) Describe the structure and function of thyroid gland.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words

16. (a) Explain in detailed about protein metabolism.

Or

(b) Describe the importance of vitamins and minerals with regard to human health.

17. (a) Illustrate the structure and function of human heart with suitable illustration.

Or

(b) Give an account on circulatory system in human.

18. (a) Explain the structure and function of human lung with suitable illustration.

Or

(b) Explain-Renal failure and Dialysis.

19. (a) Explain the types and mechanism of muscular contraction.

Or

(b) Write an essay on EEG.

20. (a) Write an essay on the functional interactions and metabolism of hormones.

Or

(b) Give an elaborate account on the neuro-endocrine regulation of reproduction.

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(6 pages)

Reg. No. : .....

Code No. :7187 **Sub. Code :PZOM 22**

M.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2019.

Second Semester

Zoology — Core

ENVIRONMENTAL BIOLOGY AND BIODIVERSITY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The cyclical path of elements from the environment to biotic system and back is called

   (a) Biotic phase

   (b) Abiotic phase

   (c) Energy flow

   (d) Bio-geochemical cycle

2. The process of orderly and progressive replacement of one community by another in an area is called

   (a) Ecological pyramid

   (b) Ecological succession

   (c) Ecological niche

   (d) all the above

3. The problem of excessive nutrient load in water bodies is called

   (a) Water pollution (b) Eutrophication

   (c) COD (d) BOD

4. The amount of oxygen required for chemical oxidation of organic matter and other reducing agents present in waste water is called

   (a) BOD (b) COD

   (c) CFC (d) CO_2

5. The tree hugging movement for the conservation of forest is

   (a) Reforestation

   (b) Deforestation

   (c) Chipko movement

   (d) None

6. Which country is the pioneer in wind energy?

(a) Denmark (b) Australia

(c) America (d) Africa

7. _____ is a catalogue of taxa prepared by IUCN that face risk of extinction.

(a) Hot spot (b) Gene bank

(c) Gene library (d) Red list

8. The totality of all inherited genetic variation within a population is

(a) Species diversity

(b) Genetic diversity

(c) Ecosystem diversity

(d) Biodiversity

9. Conservation method that provides protection to total ecosystem through a net work of protected areas is

(a) In-situ (b) Ex-situ

(c) Sanctuary (d) Biosphere reserve

10. The geographical area rich in plant and animal species, of which many are

(a) Sanctuary (b) Zoological Park

(c) Hot spots (d) Biosphere reserve

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write short notes on energy flow in an ecosystem.

Or

(b) Explain Nitrogen cycle with a diagram.

12. (a) Narrate the ecological effect of acid rain.

Or

(b) Give an account on solid waste management.

13. (a) List out the reasons for conservation of natural resources.

Or

(b) Discuss the distribution of water resources in India.

14. (a) Give your opinion on man-wildlife conflicts.

Or

(b) What are the various sampling methods employed in ecological methods?

15. (a) Give a short note on fragmentation of biodiversity.

Or

(b) Write a brief account on zoogeographical realms.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the methods employed in the measurement of primary productivity.

Or

(b) Describe the various components of a pond ecosystem.

17. (a) Write an essay on population explosion and its consequences.

Or

(b) Give an elaborate account on sources and impacts of radioactive pollution in the environment.

18. (a) Write a detailed account of mineral resources, its uses and exploration.

Or

(b) Narrate the types and management of forest resources in India.

19. (a) Discuss the values and uses of biodiversity for human welfare.

Or

(b) Comment on the principles of biodiversity. Add note on diversity indices.

20. (a) What are the methods employed in conservation of wildlife.

Or

(b) Write an elaborate account on the sanctuaries, national parks arid biosphere reserves of India.

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(8 pages)

Reg. No. : .....

Code No. : 6888 **Sub. Code : KZOM 32/ PZOM 33**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Third Semester

Zoology

BIOSTATISTICS AND BIOINFORMATICS

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The mistake when using secondary data effectively is:
   (a) To evaluate its usefulness.
   (b) To assume it is right.
   (c) To combine it with other data.
   (d) To locate it via people.

2. Which one of these sampling methods is a probability method?
   (a) Convenience (b) Judgment
   (c) Quota (d) Simple random

3. If a researcher selected five schools at random and then interviewed each of the teachers in those five schools, the researcher used
   (a) Simple random sampling
   (b) Stratified random sampling
   (c) Cluster random sampling
   (d) Two-stage random sampling

4. What is the median of the following numbers? 1, 2, 2, 8, 9, 14
   (a) 5 (b) 2
   (c) 13 (d) 6

5. If for a distribution the difference of first quartile and median is greater than difference of median and third quartile then the distribution is classified as
   (a) absolute open ended
   (b) positively skewed
   (c) negatively skewed
   (d) not skewed at all

6. The kurtosis defines the peakness of the curve in the region which is

(a) around the mode (b) around the mean

(c) around the median (d) around the variance

7. In binomial distribution, the formula of calculating standard deviation is

(a) square root of p (b) square root pq

(c) square root of npq (d) square root of np

8. Normal distribution is also classified as

(a) Gaussian distribution

(b) Poisson distribution

(c) Bernoulli's distribution

(d) Weighted average distribution

9. The first bioinformatics database was created by

(a) Richard Durbin (b) Dayhoff

(c) Michael j.Dunn (d) Pearson

10. Which of the following is a nucleotide sequence data base?

(a) EMBL (b) SWISS PROT

(c) PROSITE (d) TREMBL

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What is sampling? What are the essentials of sampling?

Or

(b) What are the methods of non-random sampling? Write an account about any one method.

12. (a) Calculate median from Ihe following distribution

Class	20-24	25-29	30-34	35-39
Frequency	3	5	10	20
Class	40-44	45-49	50-54	55-49
Frequency	12	6	3	1

Or

(b) Define skewness. Mention the important relative measures of skewness with their formula.

13. (a) State and prove the multiplication theorem of probability. How is the result modified when the events are dependent?

Or

(b) Mention the properties of the normal distribution.

14. (a) Explain the various uses of chi-square test.

Or

(b) Discuss the F lest for testing the equality of two sample variance.

15. (a) What are the main objectives of biological database?

Or

(b) Give a short account about the database retrieval tool Locus link.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give an account about different types of classification with examples.

Or

(b) What is tabulation of data? Write in detail about the parts of a table and give an example.

17. (a) Calculate Karl Pearson's coefficient of correlation from the following data and interpret its value

Marks in physiology	48	35	17	23	47
Marks in biochemistry	45	20	40	25	45

Or

(b) Calculate the arithmetic mean, the median, the mode and the standard deviation for the data given below.

Class :	81-90	91-100	101-110	111-120
Frequency :	2	5	13	20
Class :	121-130	131-140	141-150	151-160
Frequency :	30	9	37	29
Class :	161-170	171-180	181-190	
Frequency :	11	3	1	

18. (a) The manufacturer of a product claims that his product has a mean life of 25 months with a standard deviation of 5 months. A random sample of 6 gave the following values

Life in months: 24 26 30 20 20 18

Can you regard the producers claim to be valid at 1% level of significance? (the table value for decree of freedom 5 is 4.032 at 1% level of significance).

Or

(b) A box contains 8 red, 3 white and 9 blue balls. If 3 balls are drawn at random, determine the probability that (i) all three are red (ii) all three are white (iii) 2 are red and 1 is blue (iv) at least one is white (v) 1 of each colour is drawn (vi) the balls are drawn in the order red, white and blue.

19. (a) A certain drug is claimed to be effective in curing colds. In an experiment on 328 people with cold, half of them were given drug and half of them given sugar pills. The patient's reactions to the treatment are recorded in the following table. Test the hypothesis that the drug is no better than sugar pills for curing cold. (the table value for degree for freedom 2 at 5% level of significance is 5.99).

Or

(b) When is the sign test used? Use sigh test on the data given below to determine whether there is statistically significant increase in the values produced by treatment B over those produced by treatment A.

Treatment A : 46 41 37 32 28 43 42 51 28 27

Treatment B: 52 43 37 32 31 39 44 53 26 31

20. (a) Write an essay on the applications of bioinformatics.

Or

(b) Write short notes on

(i) SWISS-PROT

(ii) NCBI.

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(6 pages) Reg. No. : .....

Code No. : 7190 **Sub. Code : PZOM 34**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Third Semester

Zoology – Core

RESEARCH METHODOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Method to attain goal science and to expand the frontiers of knowledge is

   (a) Research (b) Reflection

   (c) Bibliography (d) Reference

2. Alta Vista was a web search established in the year

   (a) 1985 (b) 1995

   (c) 2005 (d) 2015

3. The practice of measuring the dimensions of microscopic objects is generally referred to as

   (a) Micrometry (b) Microarray

   (c) Microinfection (d) Motailty

4. Dark field microscope is also called

   (a) Bright field microscope

   (b) SEM

   (c) Ultra microscope

   (d) TEM

5. The supporting solid medium of an electrophoresis

   (a) Filter paper (b) Gel

   (c) Cellulose acetate (d) All the above

6. The unit of expressing the sedimentation coefficient is

   (a) Svedberg unit (b) Rho factor

   (c) PCR (d) PMT

7. The technique in which mixture of components are separated based on their differential migration is

(a) pH meter (b) Colorimeter

(c) Spectroscopy (d) Chromatography

8. An unstable isotope that emits ionizing radiation is

(a) Radioactivity

(b) Radioactive labelling

(c) Radio isotopes

(d) Radioactive dating

9. Who was awarded Nobel Prize for NMR spectroscopy?

(a) Jean Jeener (b) Richard R. Ernst

(c) Joanna Rose (d) Alger J.R.

10. The emission of radiation by neutral atom is measured by

(a) Flame photometry

(b) Spectrophotometry

(c) NMR spectrometry

(d) ESR spectrometry

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the components of a research report.

Or

(b) Comment on laboratory safety.

12. (a) Explain the principle and structure of compound microscope.

Or

(b) Write short notes on stage and ocular micrometer.

13. (a) Explain the different types of staining techniques.

Or

(b) Write short notes on components of colorimeter.

14. (a) Give an account of gel electrophoresis.

Or

(b) Explain Geiger – Muller Counter.

15. (a) Explain the components of Spectrophotometer.

Or

(b) Write the applications of NMR spectrophotometer.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the objectives and characteristics of research.

Or

(b) Give an account of intellectual property rights associated with terminology.

17. (a) Describe the principles and types of electron microscope.

Or

(b) Explain in detail the atomic force microscope.

18. (a) Give in detail the principle, structure and applications of centrifuge.

Or

(b) Describe various methods and applications of cryopreservation.

19. (a) Explain in detail the thin layer chromatography.

Or

(b) Give an account of principle, techniques and applications of autoradiography.

20. (a) Write a detailed account of instrumentation and applications of ESR spectrophotometer.

Or

(b) Give an account of principle and instrumentation of Flame emission photometry.

(6 pages) Reg. No. : .....

Code No. : 7902 **Sub. Code : PZOM 12**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2019.

First Semester

Zoology – Core

CELL AND MOLECULAR BIOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. An organism which contains single chromosome and cell division occurs through fusion or budding is called

(a) Eukaryotes

(b) Prokaryotes

(c) Bacteria

(d) Primitive organism

2. Osmosis is

(a) Flow of water from lower to higher concentrations through a permeable membrane

(b) Flow of water from higher to lower concentrations through a permeable membrane

(c) Both (a) and (b)

(d) None of the above

3. Which of the following is not considered as a part of endomembrane system?

(a) Vacuole (b) Lysosome

(c) Golgi complex (d) Peroxisome

4. Animal cell differs from plant cell in possessing

(a) Plastid (b) Golgi body

(c) Vacuole (d) Centrosome

5. Bacterial cell wall is mainly composed of

(a) Glycoprotein (b) Peptidoglycan

(c) Glycan (d) Muropeptides

6. Plasmodesmata is found in

(a) Cellwall (b) Cytoplasm

(c) Nucleus (d) Cell membrane

7. Engulfment of liquid particle into cell is called

(a) Phagocytosis

(b) Pinnocytosis

(c) Receptor mediated endocytosis

(d) None of the above

8. Who discovered nucleus

(a) Robert Hook

(b) Robert Brown

(c) William Hook

(d) William Harvey

9. Smooth endoplastic reticulum is the site of

(a) Protein synthesis

(b) Carbohydrate synthesis

(c) Lipid synthesis

(d) Both (b) and (c)

10. A process by which a malignant cell spread throughout normal cells

(a) Tranformations (b) Metastasis

(c) Invasiveness (d) Progression

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Give an account on cellular respiration.

Or

(b) Explain the importance of membrane transport systems.

12. (a) Describe the ultrastructure and role of ribosomes.

Or

(b) Discuss the biosynthesis of secretory proteins.

13. (a) Write a brief note on the process and importance of cell to cell interactions.

Or

(b) Give an account on signal transduction pathways.

14. (a) Explain the structure and functions of nucleolus.

Or

(b) Give an account on nucleocytoplasmic interaction.

15. (a) Explain the interphase of cyclin and their kinases.

Or

(b) Write an account on the types of cancer and the main causative factors.

PART C — (5 × 8 = 40 marks)

Answer ALL questions.

Each answer should not exceed 600 words.

16. (a) Explain in detail about the intercellular junctions.

Or

(b) Write an essay on the role of mitochondria as the 'power house' of the cell.

17. (a) Describe how lysosomal protein targeted to lysosome and discuss about the addition of lysosome targetting signal patch on protein which is normally cytosolic.

Or

(b) Describe the events that occur during the autophagic destruction of cellular organelle.

18. (a) Write an essay on calcium dependent and calcium independent cell adhesion molecules.

Or

(b) Explain the significance of different signalling molecules and their receptors.

19. (a) Write an essay on homokaryons and cytoplasts.

Or

(b) Give a detailed note on nuclear transplantation with suitable illustrations.

20. (a) Give an elaborate note on the molecular mechanisms for regulating mitotic events.

Or

(b) Write an essay on bacteria and virus mediated cancer in human beings.

(6 pages)

Reg. No. : .....

Code No. : 7908 **Sub. Code : PZOM 32**

M.Sc (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Third Semester

Zoology — Core

BIOTECHNOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions,

Choose the correct answer :

1. Northern blotting is the technique for the specific identification of ————————

(a) RNA molecules

(b) DNA molecules

(c) Both (a) and (b)

(d) Amino acid

2. cDNA is produced from ————————

(a) tRNA

(b) mRNA

(c) Protein chain

(d) DNA

3. In pBR^{322}, pBR stands for ————————

(a) Plasmid bacterial recombination

(b) Plasmid bacteril replication

(c) Plasmid Boliver and Rodriguez

(d) Plasmid Baltimore and Rodriguez

4. Which of the following bacterium is considered as natural genetic engineer.

(a) *Agrobacterium tumefaciens*

(b) *Agrobacterium radiobactor*

(c) *Psueudomonas putida*

(d) *Thermus aquaticus*

5. Transgenic animals used for gene farming or molecular farming is called as ————————

(a) Biopests

(b) Bioreators

(c) Biofarmers

(d) None of these

6. First cloned animal is ————————

(a) Dolly sheep

(b) Dog

(c) Mule

(d) Cat

7. The process of extracting metals from ore bearing rocks are called ————————

(a) Bioextraction

(b) Microbial extraction

(c) Biofiltration

(d) Bioleaching

8. Fermentation products include ————————

(a) Food products

(b) Industrial chemicals

(c) Speciality chemicals

(d) All the above

9. Which of the following statement is true?

(a) Drugs and drug targets generally have similar molecular weights

(b) Drugs are generally smaller than drug targets

(c) Both (a) and (b)

(d) Drugs are generally larger than drug targets

10. Steroids are resemble with which natural compound?

(a) Adrenalin

(b) Cortisol

(c) Cholesterol

(d) Thyroid hormone

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Comment on different types of restriction enzyme?

Or

(b) Describe Maxam and Gilbert techniques for DNA sequencing.

12. (a) Give an account on Simian virus 40.

Or

(b) Comment on gene transfer technology by eletroporation methods.

13. (a) What is super ovulation? Explain.

Or

(b) Describe DNA microinjection method to produce transgenic mice.

14. (a) Give an account on Photo bioreactor.

Or

(b) What is bioleaching? Explain.

15. (a) What are semi-synthetic antibodies? Explain.

Or

(b) Write the importance of microanalysis in diagnosis.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) List out the applications of Polymerase chain reaction.

Or

(b) Describe the southern blotting techniques and mention the application factors affecting southern blotting.

17. (a) Write an essay on fusion of plasmid filled liposome with protoplast.

Or

(b) Describe the bacteriophage (λ) cycle.

18. (a) What is an ex-vivo gene therapy? Explain.

Or

(b) Explain the steps involved in IVF.

19. (a) What is single cell protein? Describe the role of microorganisms in the production of single cell protein.

Or

(b) What is xenobiotic compounds? Explain the role of different microorganisms in detoxification of xenobiotics.

20. (a) How is interferon produced by genetically engineered cells?

Or

(b) Explain in detail about drug designing and targeting.

———————

(6 pages) Reg. No. : .....

Code No. : 6884 **Sub. Code : KZOM 23/ PZOM 23**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Second Semester

Zoology

EVOLUTION

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Theory of abiogenesis was put forwarded by _____

(a) Spallanzani
(b) Redi
(c) Pasteur
(d) Van Helmont

2. Swan neck flask experiment was performed by _____

(a) Oparin and Haldane
(b) Darwin
(c) Aristotle
(d) Luis Pasteur

3. According to De Vries theory, evolution is _____

(a) Jerky
(b) Discontinuous
(c) Both (a) and (b)
(d) Continuous and smooth

4. Similarity between the animals and plants of different species is called _____

(a) Sexual homology
(b) Phylogenetic homology
(c) Serial homology
(d) Analogy

5. Genetic drift is on account of _____

(a) variations
(b) mutation
(c) increase in population
(d) decrease in population

6. Natural selection as the guiding force of evolution was recognised by

(a) Dobzhansky (b) Charles Darwin

(c) Both (a) and (b) (d) Simpson

7. The evolution which results in the production of new adaptive types through a process of population fragmentation and genetic divergence is known as ————

(a) micro evolution

(b) macro evolution

(c) divergent evolution

(d) convergent evolution

8. Taxes whose members have descended from a common ancestors are called ———— evolution.

(a) monophyletic (b) polyphyletic

(c) both (a) and (b) (d) convergent

9. Primates are characterized by ————

(a) single births

(b) lengthy gestation

(c) an extended period of juvenile dependency

(d) all the above

10. An act which ends in itself with no benefit to the individual would be which of the following?

(a) Hedonic (b) Pro social

(c) Sadistic (d) Altruistic

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Summarize oparin concept of origin of life on earth.

Or

(b) Differentiate between coacervates and microspheres.

12. (a) Give an account on palaeontological evidences of evolution.

Or

(b) Write a note on mutation theory of Hugo Derives.

13. (a) What do you understand by gene frequency? Explain it.

Or

(b) Describe why allopatric speciation is also called geographic speciation.

14. (a) Give an account on rates of evolution.

Or

(b) Write a note on mechanism of the origin of higher categories.

15. (a) Give an account on kith and kin selection.

Or

(b) Write short note on place and time of origin.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write what do you know about the history of earth and origin of life.

Or

(b) Discuss various theories of origin of life on earth which one seems to be most plausible and why?

17. (a) Describe the theory of inheritance of acquired characters.

Or

(b) Write any three evidences in support of the theory of evolution.

18. (a) State Hardy Weinberg's law of equilibrium and its significance.

Or

(b) What are the different types of natural selection? Explain the role of stabilizing selection with suitable example.

19. (a) Write an essay on extinction and its causes.

Or

(b) Differentiate between three different types of evolution. Trace the interrelationship between them.

20. (a) Give an account on fossil history of man.

Or

(b) Write an essay on evolutionary trends of man evolution.

———————

(6 pages) **Reg. No. :** .....

Code No. : 7905 **Sub. Code : PZOM 21**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2019.

Second Semester

Zoology — Core

MICROBIOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Working one sheep, Pasteur observed that when sheep were in oculated with cultures of anthrax namely

(a) Perbrine (b) Bacillus

(c) Epicuris (d) E – Coli

2. The Capsomers are made up of

(a) Polypeptide Chain

(b) Monosaccharide

(c) Glucose

(d) Aminoacid

3. A typical bacteria growth curve shows ———— distinct phases

(a) two phase (b) one phase

(c) five phase (d) four phase

4. Botulism is a neuroparalytic disease. It is charactrised by the following

(a) Paralysis of eye muscle

(b) Cholera

(c) Giardiasis

(d) Kefir

5. One kilogram of Azospirillum inoculate is mixed with 40 litrs of water to make a

(a) Gibberellic (b) Azospirillum

(c) Slurry (d) arbuscle

6. Milk is centrifuged at 3000 r.p.m for

(a) 40 minutes (b) 50 minutes

(c) 10 minutes (d) 30 minutes

7. The separation of solid suspended particle from the sewage is called

(a) Sedimentation

(b) Overflowing

(c) Stagnent

(d) Chemical precipitation

8. Name of HIV is

(a) Killer virus (b) Adieno virus

(c) Viroids (d) retrovirus

9. Diphtheria is characterised by a local member formatting at the site of

(a) Incubation

(b) Implantation

(c) triple antigen

(d) Syphilis

10. Heating helps the penetration of carbol fuchsin into the ————————

(a) cell wall (b) Protoplasm

(c) Cytoplasm (d) Plasma membrane

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) List the micro organism commonly found in soil.

Or

(b) Explain Whittaker's five kingdom concept.

12. (a) Write short notes on microbiological media.

Or

(b) Explain synchronous growth.

13. (a) Enumerate the sources of contamination of food.

Or

(b) Describe the production of penicillin and wine.

14. (a) Bring out the significance of disinfectants.

Or

(b) Write notes on Hepatitis A and B.

15. (a) What is microbial leaching? Give two example.

Or

(b) Explain sulphur cycle.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the contamination, preservation and spoilage of food.

Or

(b) Differentiate mode of spread of Infection.

17. (a) Give a detailed note on food borne disease.

Or

(b) Explain organic compost.

18. (a) What are the Biological significance of Dengue fever and chikungunya. Explain.

Or

(b) What are the link between petroleum and microbiology?

19. (a) What are the major role of pseudomanas and bacillus as insecticide of Agricultural microbiology.

Or

(b) Explain dairy products and fermentation technology.

20. (a) Describe measurement of growth and enumeration of cells.

Or

(b) Explain any two Bacterial disease.

(6 pages) **Reg. No. :** .....

Code No. : 7909 **Sub. Code : PZOM 34**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Third Semester

Zoology – Core

RESEARCH METHODOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. How does ultraviolet light microscopy use fluorescence to make images?
   (a) Objects absorb invisible ultraviolet light and emit visible light to make images
   (b) Objects absorb invisible ultraviolet light and emit nothing
   (c) Objects transmit ultraviolet light without absorbing it
   (d) Objects scatter all ultraviolet light so it never enters the microscope's objective lenses.

2. If you were given a specimen of an active, motile microorganism, which of the following types of microscopy would be the most effective in visualizing the live microbe?
   (a) Bright-field microscopy
   (b) Dark-field microscopy
   (c) Fluorescence microscopy
   (d) Phase-contrast microscopy

3. Which of the microscopes below form images in visible light?
   (a) Bright-field (b) Dark field
   (c) Fluorescence (d) (b) and (c)

4. After centrifugation when sublimate settles, clear liquid ————.
   (a) Can be allowed to rest
   (b) Can be allowed to form crystals
   (c) Can be decanted off
   (d) Can be evaporated

5. A pH meter is an example of
   (a) An ion-selective electrode
   (b) An electrolytic cell
   (c) A fuel cell
   (d) A reference electrode

6. Chromatography is a physical method that is used to separate and analyse ————.

(a) Simple mixtures (b) Complex mixtures

(c) Viscous mixtures (d) Metals

7. If proteins are separated according to their electrophoretic mobility then the type of electrophoresis is

(a) SDS PAGE

(b) Affinity Electrophoresis

(c) Electro focusing

(d) Free flow electrophoresis

8. Labelled antibodies are used to detect

(a) The presence of a particular DNA molecule in Southern blotting

(b) The presence of a particular DNA molecule in Western blotting

(c) The presence of a particular protein molecule in Southern blotting

(d) The presence of a particular protein molecule in Western blotting

9. The visible portion of the electromagnetic spectrum occurs between __nm and __nm.

(a) 1, 10 (b) 10, 300

(c) 400, 700 (d) 800, 1200

10. What is the function of an absorption spectrum?

(a) It converts light energy into electrical energy

(b) It is a graph of a chemical relating the absorbance to wavelength

(c) It is a graph of a chemical relating the absorbance to concentration

(d) It is the amount of radiation retained by a sample

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) What is a research report writing? List out its types.

Or

(b) Define patent, copy right and trademark.

12. (a) Give a brief account of fluorescence microscopy.

Or

(b) Write a short note on phase contrast microscopy.

13. (a) Comment on freeze drying process.

Or

(b) What is the working principle and components of pH meter?

14. (a) Write the principle and methodology of thin layer chromatography.

Or

(b) Comment on scintillation counter used in radiation biology.

15. (a) Draw the block diagram of spectrofluorimeter and discuss its components.

Or

(b) Define Beer–lambert law and discuss its implications of absorption phenomena.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Write in detail about the safety hazards to be followed in general laboratory practices.

Or

(b) Write in detail about the steps involved in research process.

17. (a) Explain in detail the preparation of sample for transmission electron microscopy.

Or

(b) Write an essay on principle, instrumentation and applications of atomic force microscopy.

18. (a) How will you prepare the biological sample for microtome sectioning?

Or

(b) Write an essay on any two cytotechniques used for the preparation of biological samples.

19. (a) Write in detail about the principle, methodology and applications of immunoelectrophoresis.

Or

(b) Write a detailed account on Southern Blotting technique.

20. (a) Write a detail note on Flame Emission Photometry.

Or

(b) Elaborate on principle, methodology and applications of UV-Vis spectroscopy.

———————

(6 pages) **Reg. No. :** .....

Code No. : 7188 **Sub. Code : PZOM 24**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Second Semester

Zoology — Core

ENTOMOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is the smallest order of class insecta?

(a) Hemiptera (b) Oelonata

(c) Zeropter (d) Coleoptera

2. In the life cycle of an insect, when metamorphosis is complete it is named as ————.

(a) holometabola (b) hemimetabola

(c) heterometabola (d) semimetabola

3. Chewing and biting type of mouth parts are found in ————.

(a) grasshopper (b) bettle

(c) honeybee (d) silkworm

4. The excretory organs of insects are called ————.

(a) flame cells (b) contractile vacuole

(c) collecting duct (d) malphigian tubules

5. Sitophillus oryzae is a common stored grain pest of ————.

(a) sugar (b) wheat

(c) sugarcane (d) pulses

6. ———— is responsible for spreading yellow fever.

(a) Housefly (b) Aedes aegypti

(c) Sand fly (d) Dragon fly

7. The chemicals which produce sterility in insects without affecting the others metabolic activity are termed ————————.

(a) chemosterilants (b) antimetabolites

(c) repellants (d) pheromones

8. In an IPM program, ———————— control is considered first.

(a) chemical (b) mechanical

(c) cultural (d) legislative

9. Muga silk is produced by ————————.

(a) Anthreaea mylitta

(b) Anthreaea pernyi

(c) Anthreaea roylei

(d) Anthreaea assamensis

10. ———————— is a technical term for eating insects as a food.

(a) Entomology

(b) Entomophagy

(c) Epidemology

(d) Endocrinology

PART B — (5 × 5 = 25 marks)

Answer ALL the questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write the principles of insect classification.

Or

(b) What is meant by taxonomy? Explain it.

12. (a) Write a note on different types of antonnae.

Or

(b) Comment on mating and oviposition.

13. (a) Give an account on life cycle of cotton pests.

Or

(b) Describe the biology of mosquito.

14. (a) Comment on important measures of cultural control.

Or

(b) Write the classification of insecticides based on mode of entry.

15. (a) Write briefly on forensic entomology.

Or

(b) List out the economic importance of silkworm.

PART C — (5 × 8 = 40 marks)

Answer ALL the questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write the classification of insects upto order with suitable example.

Or

(b) Comment on collection and preservation of insects.

17. (a) Describe the structure and physiology of digestive system.

Or

(b) Explain the structure of heart and write the mechanism of haemolymph circulation.

18. (a) Enumerate the life cycle and damage caused by paddy pests.

Or

(b) Describe the biology and mode of transmission of disease caused by sand fly.

19. (a) Write briefly on recent trends in pest control.

Or

(b) Explain the assessment of pest population and pest damage.

20. (a) List out the medicinal use of insects.

Or

(b) Insects as protein sources of human and animal feeds – Discuss.

———————

(6 pages) Reg. No. : .....

Code No. : 7907 **Sub. Code : PZOM 24**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2019.

Second Semester

Zoology — Core

ENTOMOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The coiled tongue and the colourful wings which are covered with

(a) Skin (b) Scales

(c) Layers (d) Cuticle

2. Larvae of many insects undergo ————————

(a) Corpora allata

(b) JH

(c) diapause

(d) PTTH

3. Mechanoreceptors detect not only the physical infraction but also

(a) air movements (b) x-ray radiation

(c) Lepidopteran (d) Hawk moths

4. Number of wings, the ———————— and the presence of wing covers

(a) Compound eye (b) Coxa

(c) Spiracle (d) Venation

5. Honey bee– the mandibles are very small and suitable for

(a) True bugs (b) Proboscis

(c) Moulding wax (d) Compound eye

6. A biological ———— is an organ that allows dissolved oxygen from the water to pass into organism

(a) gill (b) lings

(c) skin (d) pores

7. When hatched from the eggs, they are very small and eat very

(a) large (b) little

(c) Tomato (d) Apple

8. A chemosterilant is a chemical compound that causes

(a) Reproductive sterility

(b) digestive problem

(c) Endocrine problem

(d) Circulatory disorder

9. I P M

(a) Integrated Pest Montrol

(b) Integrated Pest Management

(c) Indian Pest Moth

(d) Indoor Pest Moth

10. Forensic entomology is the

(a) Scientific study of invasion

(b) Study of crime

(c) Study of CBI

(d) Study of Archeology

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Enumerate the salient features of order Homoptera.

Or

(b) Write about the respiration in terrestrial insects.

12. (a) Explain the neuroendocrine system of an insects.

Or

(b) Describe the digestive system of silk worm.

13. (a) Describe the types of antennae of insects.

Or

(b) With an example explain the important binominal Nomenclature of Insects.

14. (a) Explain life cycle of mosquito.

Or

(b) What is Nectar gland and its Roll.

15. (a) Describe structure of Malpighian tubules and their functions.

Or

(b) Explain mechanisms of haemolymph circulation in insects.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain Insect as protein sources of human and animal feeds.

Or

(b) Describe colony activity of honeybee.

17. (a) Give an account of Insect control measure natural, mechanical, physical.

Or

(b) Write the damage caused by insect pests on economically importance of paddy, sugarcane, and coconut.

18. (a) What is metamorphosis and role endocrine system.

Or

(b) Draw/explain compound eye of Insects.

19. (a) Explain different types and mouthparts of insects.

Or

(b) Explain modern classification of insects.

20. (a) Write and explain role of rectum in watz and Iorn regulation.

Or

(b) Explain pest management control measures.

(8 pages) Reg. No. : .....

Code No. : 7607 **Sub. Code : KZOM 32/ PZOM 33**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Third Semester

Zoology

BIOSTATISTICS AND BIOINFORMATICS

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Chi square test X2

   (a) Measure the degree of deviation of the experimental result from the expected result

   (b) To test the closeness of observed and expected frequency

   (c) To test the population variance and sample

   (d) All of the above

2. Standard deviation is the square of

(a) Mode

(b) Standard error

(c) Median

(d) Variance

3. A circle divided into sectors proportional to the frequency of items shown is called

(a) Bar chart

(b) Histogram

(c) Pie chart

(d) Frequency polygon

4. The mean of a distribution is 14 and the standard deviation is 5. What is the value of the coefficient of variation?

(a) 60.4%

(b) 48.3%

(c) 27.8%

(d) 35.7%

5. The student's t test is used for

(a) Small sample size

(b) Large sample size

(c) Data transformation

(d) None of the above

6. Co-efficient of variation denotes

(a) Mean deviation

(b) Percent variation of mean in relation with standard deviation

(c) Standard error

(d) None of the above

7. A hypothesis which is stated for purpose of possible acceptance is called

(a) Null hypothesis

(b) Alternative hypothesis

(c) Functional hypothesis

(d) None of the above

8. Standard error is

(a) $\bar{x} = \frac{\sum x_i}{n}$

(b) $IQR = Q_3 - Q_1$

(c) $\mu_x = \frac{\sum x_i}{N}$

(d) $\sigma = X\frac{\sigma}{\sqrt{n}}$

9. Which of the following is not a correct about BLAST?

(a) The BLAST web server has been designed in such away as to simplify the task of program selection.

(b) The programs are organized based on the type of query sequences

(c) The programs are organized based on the type of nucleotide sequences, or nucleotide sequence to be translated

(d) BLAST is not based on heuristic searching methods

10. _____ compares protein sequence against protein databases.

(a) blastn

(b) blastp

(c) blastx

(d) tblastx

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe the importance of sampling in statistical analysis.

Or

(b) Give an account on various graphical representations of biological data.

12. (a) Consider the following data which are amino acids concentration ($\mu g/100ml$) in arthropod hemolymph

240, 238, 236, 245, 242, 248, 237

Calculate the standard deviation and standard error.

Or

(b) Explain uses of regression analysis in biology.

13. (a) Enumerate the procedures of use of one-way classification in analysis of variance.

Or

(b) Define poisson's distribution and add a note on the important methods of measuring distribution.

14. (a) Explain the Mann-Whitney U test and its uses.

Or

(b) Describe in brief about the addition and multiplication theories of probability.

15. (a) Give an account on the importance of information technology in biology.

Or

(b) Briefly explain the data base similarity tools -BLAST and FASTA.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the methods of classification and tabulation of biological data.

Or

(b) Give a detailed account on primary and secondary data collection with suitable examples.

17. (a) The frequency distribution given below describes the distribution of a sample of 100 molluscan shell distributed according to the length

Length in mm	50-52	53-55	56-58	59-61	62-64
No of shells	5	20	40	28	7

Calculate the mean, median and standard deviation

Or

(b) In trying to evaluate the effectiveness of antibiotics in killing bacteria, a research institution complied the following information

Antibiotics (mg)	12	15	14	16	17	10
Bacteria (lakhs)	5	7	5.6	7.2	8.6	6.2

Calculate correlation co-efficient for bacteria on antibiotics

18. (a) Enumerate types of asymmetrical distribution with suitable illustrations.

Or

(b) What are non-parametric tests, when they are preferred in data analysis?

19. (a) Define Yates correction? Explain the usefulness of chi-square test of goodness of fit in testing independence of attributes.

Or

(b) What is F test? Given below are the on gains in weight (in pounds) of guinea pigs fed on three diets

Diet 1	40	24	46	29
Diet 2	11	21	17	28
Diet 3	19	24	34	29

Test at 5% level of significance whether the feeds have impact of weight gain in given group

20. (a) Write an essay on biological database and explain the application of software's in data base management systems.

Or

(b) Write an essay on molecular modeling and visualizing tools and its importance.

(6 pages)

Reg. No. : .....

Code No. : 7913 **Sub. Code : PZOE 41**

M.Sc.(CBCS) DEGREE EXAMINATION,
NOVEMBER 2019.

Fourth Semester

Zoology — Core

Elective : SERICULTURE

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. Mulberry, munga, oak and tussar all the four varieties of silk are present in a single country. The country is

(a) China (b) India

(c) Japan (d) Korea

2. Which among the following is NOT a non-mulberry silkworm

(a) *Antheraea pernyi*

(b) *Samia ricini*

(c) *Antheraea assamensis*

(d) *Bombyx mori*

3. The female reproductive system of B.*mori* consists of a pair of ovaries with ———— ovarioles

(a) 1 (b) 2

(c) 3 (d) 4

4. Mulberry leaf mosaic disease is caused by

(a) *Begomovirus* (b) *Becurtovirus*

(c) *Curtovirus* (d) *Eragrovirus*

5. Eggs of silk worm are kept in cold storage at

(a) 5° C (b) 2° C

(c) 25° C (d) 3° C

6. The parental seed cocoons are obtained from

(a) P1 station (b) P2 station

(c) P3 station (d) P4 station

7. Which of the following is NOT a disease of silkworm

(a) Septicemia (b) Meningitis

(c) Gattine (d) Sotto disease

8. Resistance of silkworms to the virus is controlled by polygenes, except for

(a) *Bombyx mori* nuclear polyhedrosis virus (BmNPV)

(b) Cytoplasmic polyhedrosis virus (CPV)

(c) Densonucleosis virus (DNV)

(d) Infectious flacherie virus (IFV)

9. Approximate tons of water used to manufacture 1 ton of raw silk

(a) 850 –1000 (b) 700–1000

(c) 900–1100 (d) 750–950

10. If humidity exceeds 70% during cocoon storage _____ is scattered on the floor to reduce it.

(a) $CaCl_2$ (b) $MgCl_2$

(c) $BaCl_2$ (d) NaCl

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Discuss the scope and importance of sericulture.

Or

(b) Enumerate the major requirements of sericulture industry.

12. (a) Write a brief note on the nutritive value of mulberry leaves.

Or

(b) Give a note on the types of planting system used for mulberry cultivation.

13. (a) Describe the role and objectives of NSP

Or

(b) Write short notes on rearing appliances.

14. (a) Give an account on pests of silkworm.

Or

(b) Write notes on the fungal disease green muscardine.

15. (a) Multi–ends reeling machine –Discuss.

Or

(b) List out defective cocoons and explain any six.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Explain life cycle of silkworm with suitable illustrations.

Or

(b) Discuss polyhedrasis in silkworms and its control measures.

17. (a) Write in detail irrigation, manuring and pruning of mulberry plant.

Or

(b) List and describe about common diseases of mulberry plant and give their control measure.

18. (a) Sketch a model rearing house and elaborate about its structural plan.

Or

(b) Discuss in detail on various products of sericulture.

19. (a) Comment elaborately on advanced technologies for genetically modifying the silkworm.

Or

(b) What is flacherie? Write down the symptoms, occurrence, causative agents and its management.

20. (a) Discuss in detail about raw silk testing. Add brief notes on its classifications with suitable illustrations.

Or

(b) Write notes on the following

(i) Mechanism and methods of stifling.

(ii) Storage and sorting of cocoons.

(6 pages) **Reg. No. :** .....

Code No. : 7912 **Sub. Code : PZOM 43**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Fourth Semester

Zoology — Core

AQUACULTURE

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The integrated development and management of fisheries is known as

   (a) Blue revolution (b) Green revolution

   (c) White revolution (d) Black revolution

2. The primary producers of lake ecosystem are

   (a) Zooplankton (b) Phytoplankton

   (c) Aquatic insects (d) Fishes

3. The culture of aquatic organism in the deep sea is called

(a) Coastal aquaculture

(b) Offshore aquaculture

(c) Onshore aquaculture

(d) Marine aquaculture

4. Indian major carps tolerate salinity in fresh water upto

(a) 0.02 ppt (b) 0.04 ppt

(c) 0.06 ppt (d) 0.08 ppt

5. This is a traditional craft of Kerala and Kanniyakumari

(a) Vallam (b) Boats

(c) Kattumaram (d) Canoes

6. The production of reproductively sterile fish is

(a) Triploid female (b) Triploid male

(c) Hybridization (d) None

7. Large nets to surround certain area used for active fishing is

(a) Trawls (b) Seine

(c) Gill net (d) Dip net

8. The fishes are cut along their ventral side and their visceral organs are removed is known as

(a) Gutting (b) Cleaning

(c) Freezing (d) Chilling

9. Any measure taken to reduce, control or eliminate pollution from a given environment is known as

(a) Pollution abatement

(b) Pollution measure

(c) Environment pollution

(d) None

10. Pseudomonas causes inflammation, bleeding of skin and blood clot on the fin base and the disease is known as

(a) Enteritis (b) Gill and rot disease

(c) Erythroderma (d) Dropsy

PART B — (5 × 5 = 25 marks)

Answer ALL the questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Enumerate the history of aquaculture.

Or

(b) Write about the biotic factors necessary for fish life

12. (a) Mention the culturing techniques of fresh water prawn culture.

Or

(b) Explain the culture of clam in intensive fish culture.

13. (a) Enumerate the techniques used in the production of sterile fishes

Or

(b) What is weeds? Write the different methods to eradicate weeds

14. (a) Explain how will you select site for fish farm.

Or

(b) Comment on fish preservation by drying.

15. (a) Discuss about the diseases caused due nutritional deficiency in fishes and their impact.

Or

(b) Explain water pollution and its abatement.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write an essay on the fishery resources of Tamil Nadu.

Or

(b) Explain in detail the ecological characteristics of rivers.

17. (a) Discuss in detail the sewage fed fish culture.

Or

(b) Explain in detail the composite fish culture.

18. (a) Describe the different types of gears used in fishing.

Or

(b) Explain the role of biotechnology in conservation of fishes.

19. (a) Give in detail the construction and management of nursery pond.

Or

(b) What is spoilage, and what are the causes of spoilage of fishes.

20. (a) Explain in detail the bacterial and viral diseases of fishes.

Or

(b) Explain in detail fisheries economics and marketing.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe monohybrid cross to prove Mendel's law of segregation.

Or

(b) With reference to skin colour in man, briefly explain multiple alleles.

17. (a) Explain Genic balance theory with an example.

Or

(b) Write any two syndromes caused by chromosome non-disjunction.

18. (a) Write an essay on inborn errors of metabolism.

Or

(b) State the CLB method of detection of mutation.

19. (a) Explain the genetic basis of sickle cell anaemia

Or

(b) Describe how Karyotyping is done in the human chromosomes.

20. (a) Describe the mechanism of genetic recombination.

Or

(b) Explain in detail about the genetic applications of virus.

Reg. No. : .....

Code No. : 11626 E **Sub. Code : JMZO 41/ SMZO 41**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Fourth Semester

Zoology — Main

GENETICS

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. In a dihybrid cross how many combinations are possible

(a) 2 (b) 8

(c) 4 (d) 16

2. Erythoblastosis foefalis causes

(a) Anemia

(b) Diarrhoea

(c) Jaundice

(d) Anaemia and jaundice

3. Linkage theory was proposed by

(a) Mendal (b) Devries

(c) T.H. Morgan (d) Tshermark

4. Which of the following disease is sex-linked

(a) Malignancy (b) Colour blindness

(c) Lulkemia (d) Hepatitis

5. In Kline Felter's syndromes, the sex chromosomes are

(a) XXY (b) XYY

(c) YY (d) XX

6. The substance which induce mutation is called mutant it is

(a) X-ray (b) Temperature

(c) Nitrious acid (d) All the above

7. A programme of decreasing the frequency of deleterious gene in a human population is called

(a) Eutelogenecis (b) Negative eugenics

(c) Epistatis (d) Euploidy

8. Which is the inborn error of metabolism

(a) Dysentry (b) Aebinism

(c) Hypertrichosis (d) Acidosis

9. The discoverer of bacterial transformation is

(a) Coher (b) Zober

(c) Harris (d) Griffith

10. The spherical bacterium is called

(a) Bacillus (b) Coccus

(c) Vibrio (d) Spirillum

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain back cross and test cross.

Or

(b) Give a brief account on co-dominance.

12. (a) Give an account of sex limited gene.

Or

(b) Discuss the mechanism of crossing over.

13. (a) Explain gene mutation with a suitable example.

Or

(b) Write a brief account on Turner's syndrome.

14. (a) Write a short account on positive Eugenics.

Or

(b) Write a note on Albinism.

15. (a) Explain the structure of bacterium with a neat diagram.

Or

(b) Explain bacterial conjugation.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Differentiate the prokaryotic and Eukaryotic cell.

Or

(b) Explain the structure and application of Electron microscope.

17. (a) Explain the stages of Kreb's cycle.

Or

(b) Explain the structure and functions of Ribosomes.

18. (a) Describe the structure of Giant chromosome.

Or

(b) Describe the structure and function of nucleus.

19. (a) Explain the DNA replication.

Or

(b) Explain lac operon.

20. (a) Explain Mitotic cell division.

Or

(b) Explain polymorphism of lysosomes.

———————

Reg. No. : .....

Code No. : 11625 E **Sub. Code : JMZO 31/ SMZO 31**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Third Semester

Zoology — Main

CELL AND MOLECULAR BIOLOGY

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is absent in prokaryotic cell?
   (a) plasmid
   (b) cell membrane
   (c) nuclear membrane
   (d) ribosome

2. All the followings are components of compound microscope except
   (a) stage clips (b) fine adjustment
   (c) eye piece (d) electron gun

3. Protein synthetic factories of the cell
   (a) Ribosome (b) Golgi bodies
   (c) Nucleus (d) Lysosome

4. Respiratory centre of the cells are
   (a) Lungs (b) Nucleus
   (c) Mitochondria (d) Ribosomes

5. Enzyme used to join DNA fragments
   (a) DNA ligase (b) polymerases
   (c) Nucleases (d) Lipase

6. In RNA thymine is replaced by
   (a) Adenine (b) Guanine
   (c) Cytosine (d) Uracil

7. Nucleus first discovered by
   (a) Robert Hook (b) Robert Cliv
   (c) Robert Merin (d) Robert Brown

8. Autosomes of human cell is
   (a) 44 (b) 46
   (c) 48 (d) 42

9. Crossing over takes place in the following stag
   (a) Leptotene (b) Pachytene
   (c) Zygotene (d) Diplotene

10. Suicidal bags of the cells are
   (a) Ribosomes (b) Lysosomes
   (c) Golgibodies (d) Nucleus

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain ultrastructure of Animal cell.

Or

(b) Explain different types of stains.

12. (a) Explain Rough Endoplasmic reticulum.

Or

(b) Write the functions of Golgibodies.

13. (a) Explain types of Carcinogensis.

Or

(b) Write the types of chromosomes based on position of centromere.

14. (a) Explain the Watson and crick model of DNA.

Or

(b) Explain the clover leaf model of tRNA.

15. (a) Write the significance of Meiosis.

Or

(b) Explain the Triplet codon.

(6 pages) Reg. No. : .....

Code No. : 10716 E **Sub. Code : JAZO 11/ SAZO 11**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

First/Third Semester

Zoology – Allied

CELL BIOLOGY, GENETICS AND BIOTECHNOLOGY

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Unit membrane concept was proposed by

(a) James (b) William

(c) Robertson (d) Johnson

2. Respiratory centre of the cell

(a) Golgi complex (b) Ribosome

(c) Mitochondria (d) Nucleus

3. The RNA performs the important functions in protein synthesis

(a) mRNA (b) tRNA

(c) rRNA (d) All of these

4. The phenomenon of invasion of cancer cells into the surrounding tissue is referred as

(a) Metastasis (b) Metvarmis

(c) Metosis (d) Apoptosis

5. Skin colour of man is an example for

(a) Multiple allele

(b) Multiple gene intendance

(c) Sex influenced gene intendance

(d) Sex limited gene intendance

6. The universal donor blood group is

(a) A (b) B

(c) AB (d) O

7. The absence of tyrosinase enzyme causes the disorder of

(a) Albinism (b) Alkaptonuria

(c) Phenyl ketonuria (d) None of these

8. 22 AA + XO = 45 chromosomal make up denotes the syndrome

(a) Down (b) Turner

(c) Klinfelter (d) Pon

9. Techniques that forms the back bone of genert engineering is

(a) PCR Technique (b) rDNA Technique

(c) Fusion Technique (d) All of these

10. Method adopted in the production of transgen mice

(a) Retrovirel method

(b) Microinjection

(c) Embryonic stem cells method

(d) All of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) With diagram describe the ultra structure of Mitochondria.

Or

(b) Enlist and explain the functions of plasma membrane.

12. (a) Describe the properties of cancer cells.

Or

(b) Write short note on types of Cancers.

13. (a) Explain the conditions for occurrence of Erythroblastosis foetels are comment on its impacts.

Or

(b) Explain how skin colour in human beings is inherited.

14. (a) Write short notes on Hypertrichosis.

Or

(b) Explain the chromosomal make up and characteristics of Turner's syndrome.

15. (a) Define the term Biotechnology and state the scope of Biotechnology.

Or

(b) Plasmid is an ideal Vector – Justify.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the structure and function's Nucleus.

Or

(b) With sketches explain the structure and types of Giant chromosomes.

17. (a) Highlight the salient features of Watson and Crick double helix structure of DNA.

Or

(b) Describe the mechanism of protein synthesis.

18. (a) Write an essay on Simple Mendelian trials in man.

Or

(b) With suitable example explain the features of Multiple alleles.

19. (a) Explain sex linked inheritance in man with example.

Or

(b) Critically analyse to Inborn errors of metabolism in man.

20. (a) Discuss the basic concepts of genetic engineering.

Or

(b) Highlight the methods adopted for introduction of cloned genes into host cells.

(6 pages) **Reg. No. :**.....

Code No. : 11649 E **Sub. Code : JNZO 4 A/ SNZO 4 A**

U.G. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Fourth Semester

Zoology

Non-Major Elective — PUBLIC HEALTH AND HYGIENE

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Vitamin – 'C' deficiency causes the disease

(a) Beriberi (b) Scurvy

(c) Kerato Malaria (d) Rickets

2. _____ is a water borne disease.

(a) Cholera (b) Influenza

(c) Aids (d) Polio

3. Which one is the main source of water?

(a) Pond (b) Well

(c) Rain (d) Stream

4. Botulism is caused by

(a) Bacteria (b) Virus

(c) Fungi (d) Protozoa

5. Which one of the following is an indicator of faecal pollution in water?

(a) Streptococci (b) Flavo bacterium

(c) Clostridium (d) Saccharomyces

6. _____ should be banned in festivals.

(a) Shops

(b) Alcohol consumption

(c) Toilets

(d) Police

7. Amoebiasis is a _____ disease.

(a) Protozoan (b) Viral

(c) Bacterial (d) Fungal

8. One of the following is the fore runner of non-service type latrine

(a) Pit latrine (b) Bore hole latrine

(c) Water seal latrine (d) All of these

9. National AIDS control programme was launched in

(a) 1988 (b) 1987

(c) 1992 (d) 1985

10. Records maintained in Primary health centers are

(a) Birth record (b) Death record

(c) Service record (d) All of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write an account on various dimensions of health.

Or

(b) Describe bacterial food toxicants.

12. (a) Describe the necessity of first-aid with reference to accident.

Or

(b) Describe the uses of water.

13. (a) "Excreta is a source of infection" – Discuss.

Or

(b) Write a short note on food sanitation for fairs and festivals.

14. (a) High light the causative organism, mode of infection, impacts, and treatment of Tuberculosis.

Or

(b) Comment on Typhoid.

15. (a) Mention the social aspects of excreta disposal in India.

Or

(b) Explain the life saving measures in an accident.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the factors influencing population explosion.

Or

(b) Explain the guidelines to be followed for food hygiene.

17. (a) Write any two water borne diseases and add a note on the causative agent, control measures and treatment.

Or

(b) Define first aid. What are the needs of first aid in an accident?

18. (a) Explain the different methods of excreta disposal exists among people.

Or

(b) Write in detail the physical and mental qualities of life index.

19. (a) Describe the causative agent, pathogenesis and control measures of filariasis.

Or

(b) Describe the mode of transmission, prevention and control measures of Rabies.

20. (a) Explain the components of National malaria eradication programme.

Or

(b) Write an account on primary Health care of India.

———————

(6 pages) Reg. No. : .....

Code No. : 10696 E **Sub. Code : JMZO 11/ SMZO 11**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

First Semester

Zoology — Main

ANIMAL DIVERSITY — I — INVERTEBRATA

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Entamoeba is ———— parasite.

   (a) Digenic

   (b) Monogenic

   (c) Polygenic

   (d) Trigenic

2. Whittaker five kingdom concept is based on the mode of nutrition.

(a) Photosynthesis (b) Absorption

(c) Ingestion (d) All of these

3. In platyhelminthes excretory function is performed by

(a) Nephridia (b) Parenchyma

(c) Nephron (d) Flame cells

4. One of the following hermaphrodite organism

(a) Ascaris (b) Liverfluke

(c) Filaria (d) None of these

5. The intermediate host of Guinea worm is

(a) Mosquito (b) Housefly

(c) Daphnia (d) Cyclops

6. In earthworm the Clitellum present in the segments between

(a) 10 - 14 (b) 14 - 17

(c) 16 - 19 (d) 20 - 24

7. In Penaeus the number of appendages present on cephalic region is

(a) 5 pairs (b) 6 pairs

(c) 7 pairs (d) 8 pairs

8. The important character of phylum Arthropoda is

(a) 3 pair of legs (b) Compound legs

(c) Haemocoel (d) Jointed appendages

9. Spiral type of shell is present in

(a) Une (b) Pila

(c) Mytilus (d) Sepia

10. Tube feet are characteristic feature of

(a) Star fish (b) Jelly fish

(c) Cray fish (d) Cuttle fish

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Evaluate the principle of Taxonomy.

Or

(b) Describe the external morphology of Paramecium.

12. (a) Explain the morphological features of Liverfluke.

Or

(b) Describe the structural organization of Cercaria larvae.

13. (a) What do you mean by extra-intestinal migration? Explain with example.

Or

(b) Describe the life cycle of Filaria.

14. (a) Explain the structure of compound eye in Penaeus.

Or

(b) Explain the economic importance of lac insects.

15. (a) Point out the general features of Mollucs.

Or

(b) With neat sketch explain the structural organization of Pila shell.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the life cycle of Plasmodium.

Or

(b) Give the general feature, classification of phylum porifera upto class with example.

17. (a) With neat labelled sketch explain the structural organization of Obelia colony.

Or

(b) Explain the types and economic importance of coral reefs.

18. (a) Explain the life history, parasitic adaptation and control measures of Wucherria.

Or

(b) Write an essay on the economical biological significance of earthworms.

19. (a) Honey bees are classical example for social insects — Justify.

Or

(b) Discuss the economic importance of Honey bee.

20. (a) Write an account on organs of mantle cavity in Pila.

Or

(b) Describe the reproductive system of Pila.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the excretory system of earthworm with suitable diagrams.

Or

(b) Describe the culture techniques of earthworm.

17. (a) Write an essay on South Indian and North Indian species used in Vermicomposting.

Or

(b) Give an account on the different methods Vermicomposting.

18. (a) Write an account on pest management in Vermicomposting.

Or

(b) Discuss the different steps involved in vermiwash production.

19. (a) Explain the use of earthworm in land improvement and land reclamation.

Or

(b) Write an essay on large scale production Vermicomposting.

20. (a) Earthworm are ideal friends for farmers-substantiate.

Or

(b) Write an essay on predators and parasites that affect vermiculture.

Reg. No. : .....

Code No. : 11646 E **Sub. Code : JSZO 4 B/ SSZO 4 B**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Fourth Semester

Zoology – Main

Skill Based Subject – VERMITECHNOLOGY

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. Earthworms which are seen on the surface are called

(a) Epigeic (b) Endogeic

(c) Anecic (d) Hygienic

2. Which one of the nephridium has nephrostome?

(a) Mega nephridium

(b) Micro nephridium

(c) Pharyngeal nephridium

(d) Hatschek's nephridium

3. The useful micro organisms present in vermicasting is

(a) Anti biosis (b) Mutualism
(c) Symbiosis (d) Parasitism

4. Which one of the following is the native earthworm species?

(a) Eisenia foetida
(b) Eisenia hartensis
(c) Lampito mauritii
(d) Lumbricus terrestrics

5. Locomotion in earth worm is due to

(a) Body Setae (b) Penial Setae
(c) Legs (d) Hands

6. Clitellum of the earthworm is

(a) 13-16 (b) 14-17
(c) 15-18 (d) 16-19

7. M.S. Swaminathan foundation is situated in

(a) Karnataka (b) Orissa
(c) Tamil Nadu (d) Andhra

8. The liquid extract collected after the passage of water through vermicompost and earthworm is called

(a) vermi water (b) vermi paste
(c) vermi wash (d) vermi liquid

9. In earthworm the egg and sperm are stored in

(a) clitellum (b) nephridia
(c) setae (d) cocoon

10. Earthworms that feed on dead plant and animal tissue are called

(a) Saprophages (b) Detritivorus
(c) Geophages (d) Manure worms

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the taxonomic position of earthworm.

Or

(b) Describe the methods of collection of earthworms for Vermicomposting.

12. (a) Write a note on the biology of Indian blue worm Perionyx excavates.

Or

(b) Write a note on the food habits of earthworm.

13. (a) Explain three chambered Bin method of Vermicomposting.

Or

(b) What are the changes during Vermicomposting.

14. (a) Explain the role of earthworm in faecal waste management.

Or

(b) Write a note on adverse effects of earth worm activity on crops.

15. (a) Give an account on marketing strategies of Vermicomposting.

Or

(b) "Earthworms are bioreactors"–Explain.

(6 pages) Reg. No. : .....

Code No. : 10717 E **Sub. Code : JAZO 21/ SAZO 21**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Second/Fourth Semester

Zoology — Allied

DEVELOPMENTAL ZOOLOGY, ECOLOGY, ANIMAL PHYSIOLOGY AND EVOLUTION

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The head part of sperm, acrosome is devised from

(a) mitochondria (b) lysosome

(c) golgi-complex (d) ribosome

2. The immediate successive development stage of cleavage in

(a) morula (b) blastula

(c) gastrula (d) both (a) and (b)

3. The relationship exists between sea anemane and hermit crab is

(a) parasitison (b) symbiosis

(c) commensalism (d) prey-predator

4. The abiotic factor is an Ecosystem is

(a) Plant and animal

(b) Fungi and bacteria

(c) Temperature and light

(d) All of these

5. The biomolecule which gives energy to our body is

(a) carbohydrate (b) protein

(c) lipid (d) all of them

6. Oxyntic cells in the intestine secrete

(a) Sulphenic acid (b) Hydrochloric acid

(c) Nitric acid (d) Uric acid

7. Henle's loop is the component of

(a) Neuron (b) Nephron

(c) Bronchi (d) Myofibril

8. The process that perform the function as artificial kidney is

(a) Osmosis (b) Dialysis

(c) Amniosis (d) Fibrosis

9. Natural selection theory is proposed by

(a) Darwin (b) Devries

(c) Lamarck (d) Muller

10. Devries formulated mutation theory on the observation of

(a) Oenothera – Prim Rose

(b) Pea

(c) Amaranthus

(d) All of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) With heat labelled, sketch explain the structure of human sperm.

Or

(b) Describe the architecture of human ovum.

12. (a) Enlist the explain the biological effects of light.

Or

(b) Describe the adaptation found in animal of desert habitat.

13. (a) Explain the role of enzymes involved in digestion of protein.

Or

(b) Describe the structure and functions of Haemoglobin.

14. (a) Draw the structure of nephron and explain its organisation.

Or

(b) Give the structure and types of neurons with example.

15. (a) Analyse the components of Devries theory of mutation.

Or

(b) With suitable example explain the features of Mullarian mimicry.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Classify placenta on the basis of tissues involved in it and comment on its function.

Or

(b) Analyse the experimental protocol of nuclear transplantation in Acetabularia and its outcomes.

17. (a) Write an essay on various types of association exists among animals.

Or

(b) Explain the structure and dynamics of pand.

18. (a) Describe the sequential steps of glycolysis and comment on its bioenergetics.

Or

(b) Discuss the major food constituents and their biological importances.

19. (a) Give detailed explanation on the phases of menstrual cycle and its hormonal control.

Or

(b) Summarize the physiological of urine formation.

20. (a) Explain the principles of Darwin with example.

Or

(b) Write an essay on adaptive mediation in birds.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the structure and functions of any one of the primary lymphoid organ.

Or

(b) Explain in detail about the structure and functions of spleen.

17. (a) Describe the biological properties of classes of Immunoglobulin.

Or

(b) Explain the different types of antigen-antibody reaction.

18. (a) Describe the mechanism of cell mediated immunity.

Or

(b) Write short notes on Macrophages and Stem cells.

19. (a) With sketch describe the structure of T_4-bacteriophage.

Or

(b) Write an essay on Bacterial culture media.

20. (a) Explain the causative organism, pathogenesis, symptoms and control measures of Tuberculosis.

Or

(b) Critically evaluate the methods adopted in food preservation.

Reg. No. : .....

Code No. : 11630 E **Sub. Code : JMZO 62**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Sixth Semester

Zoology – Main

IMMUNOLOGY AND MICROBIOLOGY

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The German scientist awarded the Nobel Prize for his research in Tuberculosis was
   (a) Jubs Bordet (b) Robert Koch
   (c) Louis Pester (d) Metchini Koff

2. Burse of Fabricias, the primary lymphoid organ is found in
   (a) Mammals (b) Fishes
   (c) Birds (d) Amphibians

3. Immunoglobulin is a
   (a) Polysaccharides sugar
   (b) Glycoproten
   (c) Lipid
   (d) Protein

4. Immunoglobulin that cross placenta is

(a) $I_g A$ (b) $I_g M$

(c) $I_g D$ (d) $I_g E$

5. B–lymphocytes matured in

(a) Bone marrow (b) Spleen

(c) Liver (d) Pancrease

6. During secondary immune response the Immunoglobulin that produce in layer amount is

(a) $I_g M$ (b) $I_g E$

(c) $I_g D$ (d) $I_g G$

7. The father of Microbiology is

(a) Antony Von Leeuwenhock

(b) Louis Pester

(c) Edward Jenner

(d) Alexander Fleming

8. Broth is nothing but

(a) M.S. Medium

(b) Differential medium

(c) Liquid culture medium

(d) Enriched medium

9. Poliomyelitis effects the system of

(a) Respiratory (b) Reproductive

(c) Muscle (d) Nervous

10. The volume of Nitrogen present in the atmosphere is

(a) 0.03% (b) 19%

(c) 21% (d) 79%

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the scope of Immunology?

Or

(b) Differentiate innate and acquired immunity.

12. (a) Explain the structure and function of IgA.

Or

(b) Enlist and explain the salient features of antigen antibody reactions.

13. (a) Compare and Contraction the features of lymphocyte T and B

Or

(b) Write short note on Tumour immunology.

14. (a) What are the scope of miccrobiology?

Or

(b) Describe the bacterial growth with the help of bacterial growth curve.

15. (a) Briefly explain about the commercial production steps involved in penicillin production.

Or

(b) Analyse the role of soil microbes in nitrogen fixation.

Reg. No. : .....

Code No. : 10700 E **Sub. Code : JMZO 31/ SMZO 31**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Third Semester

Zoology — Main

CELL AND MOLECULAR BIOLOGY

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The 'Cell theory ' was proposed by

(a) Kolliker

(b) Robertson

(c) Schleiden and Schwenn

(d) Robert Brown

2. A well-defined prominent nucleus is abseat in
   (a) 'T' cells (b) Prokaryotic cells
   (c) Eukaryotic cells (d) Cancer cells
3. The power-house of the cell is
   (a) Nucleus (b) Chloroplast
   (c) Mitochondria (d) Ribosomes
4. The site of protein-synthesis is
   (a) Nucleus (b) Lysosomes
   (c) Centriole (d) Ribosomes
5. Which is occur at the diploteae stage of meiotic prophase?
   (a) Polyteac chromosomes
   (b) Chiasmcte
   (c) Chromatids
   (d) Lamp-breshchromosomes
6. The controlling centre of the cell is
   (a) Nucleus (b) Lysosomes
   (c) Ribosomes (d) Mitochondria
7. Which is present only in RNA
   (a) Thecmiae (b) Guenine
   (c) Urccil (d) Cytocine
8. tRNA is otherwise called as
   (a) template RNA (b) sRNA
   (c) insoluble RNA (d) hnRNA

9. The cell in which meiosis take place is called

(a) 'T' cells (b) B cells

(c) Micocytes (d) Immune cells

10. During cytokinesis, the cytoplasm divides at

(a) 'M' phase (b) G1 phase

(c) G2 phase (d) Cleavage

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Answer should not exceed 250 words.

11. (a) Describe the structure of prokaryotic cell.

Or

(b) Write about the types of electron microscopes.

12. (a) Write the importance of centriole.

Or

(b) Mention the types of endoplasmic reticulum.

13. (a) Comment on Nucleolus.

Or

(b) Describe about polyteae chromosomes.

14. (a) Write the components of DNA.

Or

(b) Comment on DNA finger-print.

15. (a) Explain about 'cell cycle'.

Or

(b) Mention the types of meiosis.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Answer should not exceed 600 words.

16. (a) Describe the structure of an Eukaryotic cell with one example.

Or

(b) Explain the compound microscope in detail.

17. (a) Discuss about ribosomes.

Or

(b) Write about the structure and functions of Golgibodies.

18. (a) Explain DNA replication.

Or

(b) Comment on DNA as the genetic material.

19. (a) Discuss about Lemp-bresh chromosomes.

Or

(b) Write about the causes and treatment of cancer.

20. (a) Explain about Meiosis-I in detail.

Or

(b) Discuss about control of gene expression.

(8 pages) **Reg. No. :** .....

Code No. : 11631 E **Sub. Code : JMZO 63**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Sixth Semester

Zoology – Main

BIOSTATISTICS, COMPUTER APPLICATIONS AND BIOINFORMATICS

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Grouped data can be represented graphically by

(a) Histogram

(b) Frequency polygon

(c) Frequency curve

(d) All of these

2. Data which is collected by the investigator him/herself with specific objective

(a) primary data

(b) secondary data

(c) tertiary data

(d) quaternary data

3. The value of middle item of a given series of arranged data is

(a) average

(b) median

(c) mode

(d) all of these

4. Which one of the following is measure of central tendency?

(a) Range

(b) Variance

(c) Quartile deviation

(d) Mode

5. Collection of information from the internet web site with the help of computer is called

(a) file transfer

(b) downloading

(c) shareware

(d) freeware

6. In which menu font, bullet and numbering found

(a) file menu

(b) edit menu

(c) view menu

(d) format menu

7. Bioinformatics which of the following component is used for the large amount of data generated in molecular biology for biological investigation

(a) collection and maintenance

(b) distribution and analysis

(c) usage

(d) all of these

8. Which one of the following is very useful to analyse the DNA sequence by similarity searching?

(a) BLAST

(b) FASTA

(c) SOFTA

(d) Both (a) and (b)

9. Ras Mol the visualizing tool was developed by

(a) Janet

(b) Roger Sayle

(c) Leory Hood

(d) Smith Waterman

10. One of the following is a protein classification tool

(a) SCOP

(b) CATH

(c) PIR

(d) TIGR

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the various methods of classification of data.

Or

(b) Define variable. What are the types of variable? Give example for each.

12. (a) Define and explain :

(i) Range

(ii) Standard deviation

(iii) Standard error.

Or

(b) Enlist and explain the various measures of dispersion.

13. (a) Briefly explain the three basic components of computer.

Or

(b) Write in brief about the output devices of computers.

14. (a) Briefly present the historical milestones of bioinformatics.

Or

(b) Critically analyse the applications of Bioinformatics.

15. (a) What is EMBL? Point out its characteristics and uses.

Or

(b) What is BLAST? Elucidate its salient features.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Distinguish primary and secondary data. What precaution should be taken in using secondary data?

Or

(b) What is tabulation? Explain the organization of a table.

17. (a) Explain the uses of scatter diagram and correlation graph in the study of the relationship between two variables.

Or

(b) What is chi-square test? With suitable example explain its applications in the field by biostatistics.

18. (a) State the different operation of format menu in Ms Word and explain then uses.

Or

(b) Explain the evolution of computer mentioning the salient features of computer of different generation.

19. (a) Give an elaborate account of the important types of biological databases in the context of routing protein sequence analysis.

Or

(b) Write an essay on protein structure visualizing tools.

20. (a) Explain the three primary methods of producing pairwise sequence alignment.

Or

(b) Discuss the various components of Bioinformatics.

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(6 pages) **Reg. No. :** .....

Code No. : 10722 E **Sub. Code : JNZO 3 A/ SNZO 3 A**

U.G. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Third Semester

Zoology

Non Major Elective — BEE KEEPING

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The little honey bee is

(a) *Apis florea* (b) *Apis indica*

(c) *Apis dorsata* (d) *Apis mellifera*

2. Sterile female in a bee colony is

(a) Drone (b) Queen

(c) Worker (d) Dammer bee

3. The percentage of honey in bee pollen

(a) 10 – 15% (b) 20 – 40%

(c) 40 – 50% (d) 15 – 25%

4. The apiary is generally constructed in direction of

(a) Western (b) North East

(c) Southern (d) North West

5. Which one of the following is largest cell of hive?

(a) Worker cell (b) Drone cell

(c) Queen cell (d) Brood cell

6. In which season, swarming occurs

(a) Summer (b) Autumn

(c) Winter (d) Monsoon

7. Who designed the first movable hive?

(a) Aristotle (b) Newton

(c) Langstroth (d) Schleiden

8. The device helps to reduce the aggressive behaviour of bees while handling the bees

(a) Bee wipe (b) Smoker

(c) Bee veils (d) Honey extractor

9. On which principle, honey is extracted from honey comb.

(a) Centrifuge (b) Electrophoresis

(c) Adsorption (d) Dialysis

10. The sugar present in honey is

(a) Glucose (b) Fructose

(c) Cellulose (d) Lactose

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Answer should not exceed 250 words.

11. (a) Brief explain the characteristic features of Indian bee.

Or

(b) What are the functions of Queen Bee?

12. (a) Define-pollen and write the importance of pollen.

Or

(b) Elucidate the role of honey bees in making honey.

13. (a) Give a brief note on Swarming.

Or

(b) Enumerate the methods to obtain bee colonies.

14. (a) List out the disadvantages of primitive hives.

Or

(b) Enlist the appliances used for honey extraction in Apiaries.

15. (a) Write a critical account on preservation and storage of honey.

Or

(b) Write short notes on nutritive value of honey.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Answer should not exceed 600 words.

16. (a) Discuss the life history of *Apis indica*.

Or

(b) Compare the characteristic features of little bee and Dammer bee.

17. (a) Point out the inter-relationship between bees and plants.

Or

(b) Describe the essential steps to be considered in arranging an apiary.

18. (a) Identify the different type of cells found in honey comb.

Or

(b) Explain in detail about care of newly captured colonies.

19. (a) What are the appliances used for personal protection in Apiaries?

Or

(b) Write an essay on Newton's bee hive.

20. (a) Explain in details about honey extraction process.

Or

(b) Give a detailed account on chemical composition and medicinal values of honey.

(6 pages) Reg. No. : .....

Code No. : 10719 E **Sub. Code : JSZO 3 B/ SSZO 3 B**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2019.

Third Semester

Zoology — Main

Skill Based Subject — NUTRITION AND DIETETICS

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Caloric value of carbohydrate in one gram
   (a) 4.1 (b) 5.4
   (c) 9.4 (d) 9.8
2. Biochemical function of phosphorus
   (a) Maintain osmotic pressure
   (b) Bone development
   (c) Muscle development
   (d) Synthesis of haemoglobin

3. Nutrient that derive due to parboiling of rice

(a) Retinol (b) Cholecalciferol

(c) Tocophenol (d) Thiamine

4. In which macro nutrient rancidity occurs due to oxidative change?

(a) Carbohydrate (b) Protein

(c) Lipid (d) All

5. To prevent constipation which content to be presented in nutrition?

(a) Cholesterol (b) Aminoacids

(c) Fibre (d) All

6. Which instrument determine the caloric value of food?

(a) Spectro photometer

(b) Conductivity meter

(c) Calori meter

(d) Colorimeter

7. Daily requirement of protein for an adult is?

(a) 0.3 - 0.5 g (b) 0.5 - 0.7 g

(c) 0.8 - 1.0 g (d) 1.1 - 1.5 g

8. Which nutritional deficiency leads to hight blindness?

(a) Vitamin C (b) Vitamin D

(c) Vitamin A (d) Vitamin E

9. Atherosclerosis

(a) Liver disease

(b) Heart disease

(c) Renal disease

(d) Respiratory disease

10. Which diet plan is used to treat gastric ulcer?

(a) Sippy's (b) Kempler's

(c) Anderson's (d) None

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Give brief notes on monosaccharide, aldoses and ketoses.

Or

(b) Write about essential fatty acid.

12. (a) Give notes on gluconeougenesis.

Or

(b) Write the effect of cooking on carbohydrate.

13. (a) Write the beneficial effects of fibre.

Or

(b) Write the determination energy content of food by bomb calorimeter.

14. (a) Write the food requirement for pre-school children.

Or

(b) Which nutritional deficiency causes Kwashiorkar and write the remedies for the same.

15. (a) Write the management of diabetes.

Or

(b) Mention the causes and symptoms of hepatitis.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the functions of carbohydrates.

Or

(b) Write in detail the nutritional and beneficial effects of cereals and pulses.

17. (a) Discuss the process of parboiling of rice and its uses.

Or

(b) Write in detail the menuplanning and meal pattern for vegetarian.

18. (a) How the based metabolic rate in determined by Benediet and direct calorimeter methods?

Or

(b) What is meant by basal metabolic rate? Write in detail the factors affecting the same.

19. (a) Elaborately discuss obesity.

Or

(b) Write in detail the causes, prevention method and dietary management for mal nutrition.

20. (a) Write in detail the therapeutic diet and in importance.

Or

(b) Describe the symptoms, causes and food management for renal disease.

(6 pages) Reg. No. :.....

Code No. : 10705 E **Sub. Code : JMZO 62**

B.Sc (CBCS) DEGREE EXAMINATION,
NOVEMBER 2019.

Sixth Semester

Zoology — Main

IMMUNOLOGY AND MICROBIOLOGY

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. Who prepared the first vaccine
   (a) Edward Jenner
   (b) Louis Pasteur
   (c) Metchinkoff
   (d) Robert Koch

2. Resistance to infection is a natural phenomenon and it is known as

(a) Innate Immunity

(b) Acquired Immunity

(c) Humoral Immunity

(d) Active Immunity

3. Which type of cell produces memory cells and plasma cells

(a) T-cell (b) B-cell

(c) T_H cell (d) T_C cell

4. Which vaccination is used for Tuberculosis

(a) DPT (b) BCG

(c) TAB (d) Salk

5. The immunoglobulin involved in primary immune response is

(a) I_gA (b) I_gM

(c) I_gE (d) I_gG

6. Which one is the secondary lymphoid organ

(a) Bone marrow (b) Thymus

(c) Bursa fabricius (d) Spleen

7. The culture medium used to study bacterial mobility is

(a) Broth

(b) Solid medium

(c) Synthetic medium

(d) Semisolid medium

8. Which agar is used in selective medium

(a) Salmonella shigella agar

(b) Nutrient agar

(c) Bismuth sulphate

(d) Mac conkay agar

9. Which one is symbiotic nitrogen fixing organism

(a) Azatobacter

(b) Azospirillum

(c) Rhizobium

(d) Bacillus

10. Which is the chicken box virus

(a) Rubella virus

(b) Herpes virus

(c) Polio virus

(d) Rhabdovrius

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Comment on active immunity.

Or

(b) Write short notes on spleen.

12. (a) Explain the structure of immunoglobulin with diagram

Or

(b) Comment on the salient features of antigen-antibody reaction.

13. (a) Explain macrophages.

Or

(b) Explain briefly B-cell activation

14. (a) Explain the structure of bacteria with neat diagram

Or

(b) Briefly explain batch culture technique.

15. (a) Comment on the causative agents, symptoms and impact of dysentry

Or

(b) Comment on the causative agent, symptoms and impact of mumps.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe innate immunity

Or

(b) Explain in detail primary lymphoid organs.

17. (a) Explain the characters of functions of different types of Immunoglobulins.

Or

(b) Explain in detail the precipitation reactions.

18. (a) Explain immune response in detail.

Or

(b) Explain in detail the tumour immunology

19. (a) Explain the culture media and continous culture technique

Or

(b) Explain in detail about the bacterial growth curve in batch culture

20. (a) Explain how nitrogen is fixed

Or

(b) Describe in detail about the different methods of food preservation.